IMPROVING ROAD MANAGEMENT AND FINANCING: A REVIEW OF SOME RECENT EXPERIENCE OF POLICY REFORMS IN AFRICA

by

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ABSTRACT

In response to the deteriorating condition of the road network and the high associated economic costs in Africa, various consultations were held during the 1980s and early 1990s under the umbrella of the Bank-managed and donor-financed Road Management Initiative (RMI), to set the broad outline of a new policy framework for the road sector. The new policy framework puts emphasis on the commercialization of road management and advocates institutional reforms, such as the establishment of dedicated road funds managed by autonomous road boards comprised of road user representatives.

Early experiences with the classic road funds was not entirely satisfactory as they were set up as a line item in the national budget, administered and largely delivered by government departments and allocated according to more or less pre-defined priorities. The distinguishing feature of the "second generation road funds" supported by the RMI is that they are conceived of as commercial entities, managed by user representatives who both gain the benefits from the road facilities they provide but also bear the cost of any increase in charges which they approve.

The issue has been controversial as the road funds are seen in some quarters to represent a form of earmarking - distorting the allocation of resources, hampering budgetary control, impairing revenue structure flexibility and infringing on requirements of efficient cash and financial management. In contrast, transport professionals view road funds as offering the advantages of decentralization and autonomy – leading eventually to greater efficiency in use of resources - as well as assuring an improved allocation of these resources in favor of maintenance which may have particularly high rates of return.

This paper examines road funds recent performance in a few selected countries in Africa where these have been in existence for some time, based on three guiding principles: (i) have they improved resource allocation? (ii) have they improved operational efficiency; and (iii) have they improved the quantity and quality of road maintenance? While it may be true that the experiences remain quite recent and the track record is not long, there is never a perfect time for such evaluation and monitoring. Too soon and the true effects may not have become apparent. Too late and observations of the effects may have been obscured by many other long run economic adjustments.

The evaluation discussed in the paper shows that autonomous road boards have been set up in most of the countries studied. They are generally being professionally managed and are representative of user interests performing the role of service procurers. The road funds are

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financed by incremental user charges (mostly fuel levy) and funding for maintenance shows an improvement over the past. The road funds have been successful in stabilizing road financing, improving works programming efficiency and encouraging a move towards contracting and resurgence of the domestic contracting industry. One of the key elements of the road funds has been the consultative process followed in their preparation and wide dissemination of their performance as a result of which the reform process enjoys public support.

However, the evaluation suggests that setting up a dedicated financing arrangement is a necessary but not a sufficient condition to ensure that a sustainable and stable basis of road maintenance is established - translating into improved service delivery across all levels of the road hierarchy. While maintenance of the primary network has improved, quality of the rural roads has continued to deteriorate. The money available in the road funds, though a considerable improvement over the past, is still not sufficient in any case to address all road maintenance needs. Salient reform issues which deserve further attention are: mechanisms to broaden road fund resource base; strengthening of the capacity of road management agencies to accelerate implementation of maintenance; and arrangements to address non-primary roads needs and to build capacity of local contractors and consultants. The paper finally argues that effective technology transfer and efficient use of new technologies in the road sector in Africa must go hand in hand with robust and commercially oriented road management.

1. INTRODUCTION

1.1 Context. The rehabilitation of the road network, and the build up of institutional, financial and technical capacity for its continued maintenance, are among the most critical challenges confronting transport planners and policy makers in Africa. In a bid to meet burgeoning developmental needs in the 1960s and 1970s, many African countries expended considerable sums to expand their road networks. At the same time the resource base for maintaining existing and newly created road assets was squeezed and the performance of the network failed to match expectations. Most countries relied on regular recurrent budget funding through the Treasury to finance maintenance – the budgeted amounts normally fell well short of requirements and what had been budgeted was rarely fully allocated. Some countries sought to set up Road Funds (RFs) (referred to as the "*first generation" road funds*) usually as a line item in the national budget. This represented a type of "earmarking" of government revenues to finance a service, administered and largely delivered by government departments and allocated according to more or less pre-defined priorities. The RFs generally fell well short of their goals as manifested in poor governance (diversion and inappropriate usage of funds, lack of auditing), poor collection and disbursement and inadequate contribution for yearly maintenance of the country's road network.

1.2 The Road Management Initiative. In response to the deteriorating condition of the road network and the high associated economic costs being experienced, African countries under the aegis of the United Nations Economic Commission for Africa (UNECA) consulted with the World Bank, the donor community and other stakeholders giving rise to the creation of a Road Maintenance Initiative (RMI) in 1988. The RMI set out the broad outline of a new policy framework for the road sector aimed at sustainable management and financing of public road services in Africa. The RMI – which was subsequently renamed the Road Management Initiative – has since helped some nineteen countries in Africa to: identify the causes of poor

road management and financing performance; facilitate at country level a process of policy reform and development of a strategy for change; and support the implementaì secure a stable flow of funds for adequate road maintenance; clarifying responsibility for roads between different agencies; and improving management through adoption of commercial structures and practices. One important instrument for the realization of the financing reform has been the establishment of the *"second generation" road funds.* This mechanism is intended to support commercialization of road management by increasing domestic resources made available to road maintenance and by increasing the efficiency of resource use. What is different about this new generation is, inter alia: administrative separation from the budget process, management by a Board on which user representatives may sit and may be predominant in decision making; and financing by designated road user charges, based on user-pays principle.

1.4 The Assessment. In view of increasing recent experience with the implementation of policy reform, the RMI is devoting more attention at this time to assessing the results of experience and drawing lessons learned for the future. One element of this exercise has been an assessment of performance of the *"second generation" road funds* with regard to three questions: have they improved resource allocation; have they improved operational efficiency; and have they improved road maintenance. The findings of this assessment are expected to result in conclusions to be widely shared among RMI member countries and other interested stakeholders and in recommendations for future action to be debated among the same parties. The RMI considers the assessment to be an on-going exercise for which the analysis should be updated as conditions further evolve. The RMI is seeking to widely share the results of the first stage of this exercise, the work for which was carried out over the period June-December 2000, the working paper for which was published in December 2000 (Kumar, 2000). The assessment covers RFs in Benin, Ethiopia, Ghana, Kenya and Zambia. The choice of these countries was influenced by: *continuity* in the existence of RFs for a number of years; *diversity* in the institutional arrangements; and *availability* of data. These are not however intended to be seen as representative of Africa as a whole given the diversity of conditions and the different stages of reform for every country.

1.5 Objective and Organization of this Paper. This paper serves to convey the key findings of the assessment and the main recommendations tailored as may be appropriate to the needs and interests of the present analysis. The paper does draw on some country examples in addition to those cited in the assessment, notably Malawi, in view of the availability of pertinent, comparable data. The paper also draws inferences from the assessment as to the role that technology transfer might be expected to play to address outstanding issues. Following this introduction, the paper is divided into four sections. In the first section, the *structure* of the RF management is evaluated for all countries included in this study to examine the major dimensions in which experience differs among countries and between actual application and reform principles. The second section discusses the *processes* involved in the RF operations; and the third section evaluates the *objective performance* of the RFs since their establishment. The last section of this paper presents key conclusions and recommendations of this study.

2. STRUCTURE

2.1 Overview. Legislation has been passed in the countries studied to make provision for "road funds" that are used to fund road maintenance. In most cases, RFs treat roads in a similar

manner to other utilities, such as electricity and water, and the user is expected to pay an "access" charge (license fees, transit charge, etc.) and a "usage" charge through a levy on the fuel price (as a function of road use). The RF is normally managed by a secretariat responsible to a Roads Board (RB), which may be established either as an advisory board (where the minister responsible still retains all formal responsibility) or as an executive board (where some, but never all, powers may be devolved to the Board). The objectives of the RB include: oversight of the management of the RF; planning and programming for all or part of the road network; ensuring that maintenance objectives and standards are realized; raising funds for maintenance and rehabilitation of public roads; advising the Minister on matters pertaining to the efficient and effective implementation of the national roads program. These basic functions of the RBs are common to most countries examined in this study, though, in practice, the specific roles played by different boards vary from country to country.

2.2 Country Examples. Zambia was amongst the first countries to reform its road sector management in the 1990s and set up a National Roads Board in 1994 to manage a "second generation" road fund that had been created in 1993. This has been followed by the setting up of roads boards in Ethiopia, Ghana and Malawi in 1997. The Kenya Roads Board Act was enacted by the Parliament in January 2000 and a Board established in July 2000. The arrangements vary from setting up road funds under the existing Finance Act (in Zambia) with the Board members acting in advisory rather than an executive capacity, to creating the road fund under new legislation (in Malawi) as a public enterprise with the power to set road tariff, an independent chairperson, dominated by the private sector and financially autonomous. Some of the RBs serve only as procurer of services and are responsible primarily for managing the use of RFs (Zambia, Ghana, Ethiopia) while others are responsible both for managing the use of RFs and serving as service providers (Malawi). In Ghana, legislation mandates the RF revenues to be collected under government's tax making powers. In Ethiopia, the RF has elements of the "first generation" road fund--it was set up under a new legislation but the board is public sector dominated and a major proportion of the user charges are from government contributions rather than an "incremental" user charge.

2.3 Zambia. One of the pillars of "second generation" road funds is the idea of empowering road users and encouraging them to take an active role in the management of roads. Road user involvement is expected to create surrogate market discipline to encourage the road agencies to use resources efficiently. However, in practice, greater road user involvement has not always ensured efficiency in the use of resources. In Zambia, for example, with a majority of board members from the private sector, evidence from the past years suggests that the resources are not always put primarily to maintenance as the highest priority. Other considerations continue to dictate the use and allocation of resources, for example the perceived need to use RF resources to rehabilitate roads and reduce the "backlog" of delayed works. The RB has a weak legal footing, being established under a Statutory Instrument rather than its own Act. Even five years after setting up the institutional framework, the Zambia RB and road agencies continue to deal with overlapping and at times unclear mandates and the board operations are not entirely consistent with the original expectations. One of the functions of the Zambia RB was to decide on allocation of the financial resources required by the road agencies for maintenance, rehabilitation and development of the public roads and to be responsible for effective administration and management of the fund. However, in practice in the last two years, only 30% of the Government contribution for road rehabilitation and maintenance is being channeled through the RF and RB while the balance goes directly to the road agencies. This has compromised overall

coordination of the planning of financial resources for the road sector, although the RB has been able to offset this to some extent by putting in place a formal Annual Work Plan process.

2.4 Ghana. The Ghana Roads Board has 13 members, of whom five are from the public sector and eight from the private sector, with the minister responsible for transport as the Chairman. The RB participates in preparation of the annual road expenditure program; prepares and publishes procedures for disbursing funds to finance approved expenditure; and brings out audited annual accounts within three months of the end of each year. Over the past three years, the RB has been able to perform reasonably effectively, with respect to managing the RF, allocating resources in accordance with the agreed annual maintenance programs and maintaining allocative efficiency among different road types. The RB has put in place a disbursement system for both routine and periodic maintenance and developed internal and external monitoring arrangements for both financial and technical performance. However in this case, the new structure has not dealt fully with some important issues for improved road maintenance, such as adequacy of revenues for maintenance needs and expeditious collection of revenues from source.

2.5 Malawi. In the case of Malawi, the RB and the RF have been set up under comprehensive legislation in support of commercial management of the road sector. The RB has an executive role with the responsibility to administer and monitor the RF and to advise the minister on all matters pertaining to the maintenance, rehabilitation and development of public roads. At present, the functions of road fund management, procurement of services and provision of services are consolidated in the RB, creating a potential conflict in the performance of its different functions. This is in contrast to some other countries (Zambia, Ghana, Ethiopia) where road fund administration is institutionally separate from the road agencies. As a result, the Malawi RB activities for the past two years have been dominated by supervision of the initial maintenance contracts and addressing “emergency” requirements in view of the large “backlog” of work to be addressed. The RB is still to develop a work plan and prioritized road maintenance needs based systematically on identified long- term needs of the country. Though the RB is dominated by the private sector and user groups and has a private sector chairman, with the legislation putting in place a participatory process, in practice user interests are not a strong voice yet in decision making. Whereas for example, the legislation does convey powers on the RB to propose and set the user charge, in practice this is still done through a more traditional process of negotiation with the sector and finance ministries.

2.6 Ethiopia. In Ethiopia, the RB has an advisory role to the minister. In principle, the responsibilities of the RB also include administering the RF and ensure timely collection and disbursement to reviewing annual maintenance programs of the road agencies, initiate and publish technical and financial audits of the road maintenance and road safety activities and recommend to the Government additional sources and level of tariff required to finance road maintenance programs. In practice, however, the functions of the RB are somewhat limited: to administering the RF and acting as conduit of money for the programmed maintenance needs of the road agencies. The RB is not responsible for planning or channeling resources for new construction. The board members are selected by appointment for a fixed term of two years; hold regular quarterly meetings; and are administered by the RB’s directive on procedures and code of conduct. The board is predominantly public sector in terms of participation and the current Chairman is the minister responsible for roads. However, the RB has been successful in

securing funding for the RF and in making allocations based on agreed annual maintenance programs.

2.7 Kenya. The objectives and role of the Kenya RB are defined in the Kenya Roads Board Act, 1999 and as enacted by the Parliament in January 2000. The establishment, powers and functions of the RB are published in the Gazette. There was a prexistent RF in Kenya since 1994 for which the management was to be assumed by the Board on its establishment. The RB has a Chairman appointed by the President from the private sector for a period of three years who is eligible for re-appointment for one further term. The RB has all powers necessary for the performance of its functions under the Act and decides on remuneration to the board members after consultation with the Minister of Finance. The board had its first meeting in July, 2000 and appears to be still in the process of putting its operations on a firm footing. Similar to experience in other countries, it has been easier to set up institutional arrangements but implementation of concomitant policy and legislative framework has been more difficult. This process has been made more difficult by a recent legal challenge to the constitutionality of the Act setting the RB into place. Thus the capability of the RB to shortly recommence operations is in doubt at this writing.

2.8 Key Points in Summary

In all cases examined, the RBs are having some impact on improvement in resource use efficiency and resource allocation.

A firm legislative basis seems to help, as do clear, executive powers spelled out for the RB to follow.

No firm conclusions can be reached yet about the optimum distribution of members between private and public sectors, nor about the preference between a private or a public sector chairman.

While road users are now formally involved in road management and financing decisions, the impact on efficiency of resource use has been less than expected to date.

Similarly, the new structures have only had a marginal impact to date on commercialization of road management – but the impact has been positive.

3. PROCESS

3.1 Background on Road Financing Arrangements. The second generation of RFs is being established as part of an agenda to commercialize the road sector. One of the building blocks concentrates on establishing an adequate and stable flow of funds, in principle by introducing an explicit road tariff to reflect damage caused by vehicles to the roads and thus to generate sufficient revenues needed to support the maintenance of roads. Second-generation RFs are funded by levies or surcharges designated as user charges and identified separately in principle from general taxation. Revenues are expected to be paid directly into an RF managed by an RB, whose membership is chosen to represent users. The user charges are supported by a consultative process to demonstrate that road users are willing, in principle, to pay for maintenance of the network through fees and fuel levies. This willingness is, however,

conditional on there being a clear return on investment through ensuring resources go to the roads for whose maintenance users are really prepared to pay. This requires establishment of an effective system for the management of road maintenance and the identification of the costs and benefits of alternative strategies – very rarely is it the case however that such systems are in place and fully functional. This is one problem. In the past, governments were not be able to guarantee the security of assigned revenue streams or the designated allocation of expenditures (Potter, 1997). It is expected that user representation and participation in resource collection and transparency in accountability arrangements under generation of RFs would provide safeguards against possible mismanagement. This is another problem. Establishment of priorities with user input coupled with predictable availability of finance through the road fund was expected to result in significant efficiency improvements in local maintenance programs. A key part of these efficiency improvements will be improved responsiveness to users' priorities through a transparent funding allocation process.

3.2 Addressing Financing Adequacy.. The assessment looked at the country examples to evaluate the extent to which the type of benefits stated above are starting to materialize. An examination of road financing arrangements in the selected African countries offers mixed results. The amount of resources available for road maintenance has increased in all countries examined as compared to earlier years. For example in Zambia, road maintenance expenditure has increased from less than US$3 million in 1994 to more than US$5 million in 1999; the corresponding maintenance expenditure numbers for Malawi are US$2.7 million and US$10 million; for Ghana: US$14.6 million and US$86 million; and for Ethiopia US$10 million and US$17 million. These are non-negligible improvements but do not tell us whether the flows of resources to the RFs are near adequacy yet. When a comparison is made between resource flows and estimated maintenance expenditure requirements, it is seen that whereas Ghana has managed to push the ratio of needs met up to nearly 90%, in most cases the achievement ranges well below this – from 70% in Ethiopia to just over 30% in Zambia.

What explains both the overall underachievement and the range of outcomes? In most cases, attempts by the RBs to recommend raised user charges to compensate for inflation and address the growing maintenance needs of the road network have not met with success. The guiding principle in practice for road user charges has been the broad political acceptability rather than the assessed maintenance needs of the country's network – this is true even in a case such as Malawi where the RB has the powers to act independently. In most cases, the gap between the pre-existing level of road maintenance expenditure and the target level to assure that all maintenance be impacted by "budget" allocations, with long elapsed time between actual collection and deposit to the RF and the build up of arrears. Ghana's achievements may be seen to have surpassed most because of the existence of a medium term agreement to progressively raise the value of the fuel levy to ensure resources generated can meet identified needs. This arrangement is however not long term and does not convey any automaticity to the adjustment of fuel levy to changing maintenance needs.

3.3 Addressing Financing Sustainability. The critical challenge, however, is not only to answer the question: Is it enough? but also: Is it sustainable? Sustainability requires clear mechanisms, backed in policy and law, to give road users assurance that there is a framework within which they will be able to influence, if not outright determine, that funding for maintenance will adapt to what they are prepared to pay. None of the countries has yet come close to resolving this issue although the type of mechanism put in place in Ghana may provide

some pointers to a future solution. Indexing is an approach that could work in principle but there are not yet any practical examples of their use in Africa. In some countries, such as Zambia, the fuel levy has been linked, as a percentage, to the fuel price. Such mechanisms can certainly allow the real value of the fuel levy to increase but to do so in line with changes in the fuel price rather than in line with maintenance needs. Perhaps more than any single thing though, sustainability requires a common understanding of all parties, certainly including the RB itself but not limited to that, on the resource amounts needed to sustain a network at a given standard and the preferred means of raising and expending these resources. There are some technical hurdles to be overcome to make this possible, such as improvements to the quality and reliability of information on costs and to the functioning of road management systems, without which it is difficult to obtain accurate information on future maintenance needs. There are also discussions to be concluded in the economic and political spheres about: how much can be expended in the road sector given the range of developmental needs to be met and the limited means, both private and public sector, to address them; what is the optimum balance between an RF style arrangement for managing road funding and direct funding by government of developmental and some rehabilitation and maintenance needs of the road network (that is the commercialization argument is far from being won yet).

3.4 Addressing Financing Stability. One of the lessons of experience is that raising the money is not enough. The critical test of successful performance is to ensure that the resources raised provide a stable stream and reduce unpredictability in the flow of funds which would result in improved programming of road works. The merit of introducing road user charges payable directly to a road fund was to reduce uncertainty of funding to maintain maintenance work schedules. In the past, one of the challenges to good maintenance was not only that insufficient amounts were available but also that even the budgeted allocations were erratic and cut at short notice in response to difficult fiscal conditions and only a fraction of the amounts budgeted for maintenance were actually being released. Studies in Latin America show that uncertainty or untimely availability of funding to maintain regular work schedules and to buy fuel and supplies explains in part the low equipment utilization rates and low number of kilometers maintained per employee (Gyamfi et al., 1992). Even if the total level of road funding is open to competition from other demands, an RF may enable the executing agency to perform more efficiently by guaranteeing the availability of a secure core of funding. The uncertainty in the flow of funds was less of a constraint when most road works were carried out using force account, but with a conscious effort to move towards contracting on the part of most road agencies, resource stability is critical to building the confidence among private contractors and provide continuity in the maintenance programs.

Experience of different countries in the stability of road financing arrangements reflects the positive impact of RFs, though specific impacts vary and some countries have been more successful than others. Malawi represents one of the best cases for addressing stability because the institutional arrangement for collecting and disbursing fuel levy proceeds into the RF has proven to be robust. The funds for the RF are credited to a commercial bank account managed by the RB directly by the petroleum import organization. Beginning April 1998, the funds have been regularly credited every month, though with a delay of about 45 days from receipt (receipts in April were related to February collections, for example). In most other cases, it takes longer, but the question then is: is the flow reliable even if slower or more circuitous then desired? In Ethiopia, it takes about 3 to 4 months for the money to be transferred from the petroleum authority, which is the time required for documentation and clearance within petroleum

companies and authority. But the money is transferred regularly on a monthly basis and sale amounts reported. In Ghana, the fuel levy is credited monthly on a regular basis, which has produced commitment of funds and helped reduce uncertainties in the budgetary process of the road agencies, allowing them to contract programs in advance. In Zambia, the budgeted amount paid over to the RF is less than the proceeds from the fuel levy allowing arrears due to the RF to build up and then be cleared on an exceptional basis. This lack of stability has adversely affected the RB's capability to contract work. In Kenya, major slippages have been experienced in the provision of funding through the RF mainly because of delays in release of fuel levy proceeds, with comparable impact to Zambia.

3.5 Addressing Resource Allocation. A further question is whether the second generation RFs have helped to improve resource allocation. The experience varies across the countries examined. One of the principles discussed by Gwilliam and Shalizi (1999) in balancing macro and micro economic arguments concerned the ability of decision makers to improve resource allocation. An examination of RFs provides mixed results in this regard. While the amount and quality of road maintenance, in general, appears to have improved, it is clear neither if the benefits have been shared equally by different road agencies and groups of road users nor if uneconomic allocations have been avoided. Absence of sufficient funding to meet road maintenance requirements of the entire public road network (as discussed above) has often resulted in allocations in favor of the main road network to the detriment of the rural roads as evidenced in some of the country experiences discussed below.

In Zambia, allocation of resources for road maintenance for different road classes continues to be dictated by a standard "formula" rather than by a planned review of programs put forward by various road agencies, in accordance with an agreed evaluation approach. Under the policy guidelines of the RB, 40% of the RF is allocated for maintenance of main and trunk roads; 40% for feeder roads and the balance 20% for urban roads. However, driven by various pressures, including it must be said from road users, to improve the road network in urban areas, particularly the capital city of Lusaka, when taken together with a lack of planning and implementation capacity in the districts and rural areas, actual allocations have favored urban roads at the expense of feeder roads. For example, in 1999 urban roads accounted for more than 50% share of total disbursements during the year from the RF while the share of feeder roads has declined from 20% in 1997 to 12% in 1999. In Kenya in 1999, disbursements were also skewed being lowest for the rural roads--at almost 2% of the budget allocation; for municipalities about 40%; and main and trunk roads about 50%. In Ethiopia, the estimates of routine maintenance expenditure for different classes of roads (federal, regional and urban) are based on estimated average annual routine maintenance cost for different road types. The estimated average maintenance cost is multiplied by the length of the road network to arrive at total maintenance requirements for each road agency. Based on the road length, these computations result in allocation of about 70% of the resources for federal roads, 20% for regional roads and 10% for urban roads (urban road allocations are further divided into 50% for Addis municipality and the remaining amount for other municipalities). In this case, the real constraint to insufficient maintenance is not inadequacy of resources but the lack of capacity of road agencies to execute works. During 1999, about 65% of the budgeted resources for federal roads were disbursed and the corresponding proportion for urban roads was 55%. The capacity constraint has had an adverse effect on rural roads, where less than 20% of the allocated budget was disbursed—of the nine regions, six did not disburse any resources during FY99. In Ghana, the RF resources are disbursed to the highway authority for trunk roads, to the respective departments for feeder and

urban roads with a small amount reserved for road safety activities. The allocations for 1998 were respectively 52% to trunk, 20% to feeder and 27% to urban. Disbursements have tended to closely match these allocations in practice.

3.4 Summary of Key Points

Expenditures on road maintenance have been rising in relation to historical trends in the sample countries that have adopted reforms.

Expenditures still however fall short in varying degrees from what is "needed' to fully maintain the networks.

In no cases are there yet in place sustainable systems of road financing which clearly link to road user demand to the level of expenditure on maintenance

Stability and predictability of funding appears to be improving when RFs are in place, but in practice funding is often delayed and in some cases still uncertain.

Optimal resource allocation is difficult to achieve to date given inadequate funding provision and insufficient road management systems.

Allocations have responded to road user demand in that urban and trunk road maintenance expenditure is higher, whereas rural remains generally below need.

4. OBJECTIVE PERFORMANCE

4.1 Overview. Discussions undertaken as part of initiating reforms in the road sector have demonstrated that road users are willing, in principle, to pay for maintenance of the road network through incremental user charges. However, this willingness is conditioned on a clear return on investment through a responsive and transparent system of maintenance planning and implementation. Failure to realize efficient delivery of maintenance schedule may lead to questioning the basic premise of the RF and dedicated resource base. For the RF to be credible with users, it should be able to deliver readily discernable improvements throughout the country. For the purposes of this paper, two areas where objective improvements might be expected to materialize as a result of the reforms are highlighted – the quality of the road network, as this would be expected to give rise to falling vehicle operating costs and travel times; commercial management and improved planning of road works to give rise to improved opportunities to local contractors and eventually to lower unit maintenance costs.

4.2 Impact on Quality of the Road Network Generally, available evidence suggests that the RFs studied have resulted in improving the quality of the road network. There appears to be in place the elements of a strategic framework to reverse the deteriorating trend and address the neglect of past decades. However, it is difficult to put too much emphasis on specific numbers – they may be considered as indicative and not necessarily wholly reliable and comparable over time and among countries. In most of the countries, road surveys are not being carried out on a regular basis to allow an objective evaluation. Problems with road management systems have resulted in information not being collected systematically on network quality so the quantum of improvement is difficult to assess accurately.

In Zambia, the launch of the national program of road maintenance in 1995 through the RF has resulted in an increase in the share of paved roads in good condition from 20% in 1995 to 35% in 1999, and a decline in the share of poor condition roads from 51% to 29% over this period. Though there have been some improvements in the maintenance of roads in Zambia, the achievements have fallen short of expectations in the government's planning documents, which were admittedly highly ambitious: As compared to targets for annual routine and periodic maintenance of 6,370 km and 1,691 km, the actual maintenance for 1999 was for 1,079 km and 914 km respectively. In Ghana, country-wide road condition surveys in 1995, 1997, 1998 and 1999 reveal that the decline in road condition was halted and finally turned around in 1998, when the balance was finally established. The share of "good" roads increased from 21% in 1997 to 30% in 1999, while the share of "poor" roads declined from 58% to 43% during that period. Maintenance appears to have been put on an organized and sustainable level for an accelerated take-off. In Ethiopia, the share of "good" federal road network has increased from 15% in 1996 to 20% in 1998 to 25% in 1999, with a corresponding decline in the share of "poor" roads. The maintenance expenditure has more than doubled over the past five years. In Benin, quality of the core network in good condition has increased from 29% in 1998 to 33% in 1999.

However, the benefits of improved maintenance to road quality appear to have been largely confined to the main and urban roads – not perhaps surprisingly in view of what was said above about the skewed allocation of resources for maintenance funding. Maintenance responsibilities especially for sub-national roads are still unclear in many cases and the strength of user representation for rural constituencies may not always be evident in RBs. This added to the capacity constraints makes it difficult to foresee the reforms resulting in many dramatic improvement in the quality of rural road infrastructure. Characteristics of the rural/feeder road network may not be as well documented. In Zambia, as compared to a target of 15% of feeder road network in good condition, achievement to date is only 5%. In Ethiopia, no estimates are available for regional roads, though studies conducted as part of the development plan preparation suggest that quality of the feeder road network is much worse than the core network, with almost 60% to 70% in "poor" condition. In Kenya, most of the rural road network is impassable and in 1999 disbursements were only about 2% of the budget allocations. In Malawi, allocation to district roads is less than 10%, while their share of the total road network is 23%. In addition to the inadequate resources, lack of capacity at the regional level is a key constraint to poor maintenance of the rural road network. Even the budgeted resources are not fully disbursed by the regional agencies. Of specific concern is the non availability of contractors in remote rural areas, compromising the effectiveness with which moneys made available through the RF can be utilized.

4.2 Management Performance and Operational Efficiency. The introduction of road user charges payable directly to an RF managed by an RB is expected to improve management by creating an environment in which a measure of autonomy can be secured and commercial practices can be introduced. Changes are being introduced in parallel in road agencies in contract preparation and award arrangements to ensure suitability of the design and contract documents, with transparent competitive tendering and award. The experience of different countries suggests that while availability of a dedicated source of RFs has improved operational efficiency compared to what might have been expected without an RF, transparency in the use of funds has also underscored imperfections in the use of funds. Not all countries have been successful in improving operational efficiency to the same degree. A key impact of the RF has

been that it has greatly facilitated a move towards contracting and the resurgence of the domestic contracting industry, which has brought in train efficiency in the use of resources. With greater user participation, policy makers are more aware of the need to further improve the disbursement arrangements. Experience of some of the countries in the assessment is examined below.

In Zambia, the RB has instituted procedures for contract management, monitoring contract proposals and disbursement. Through participation of increasing numbers of local contractors in tendering for road works, average cost per kilometer has reduced by more than 20% over the last three years. In addition, a community initiated cost sharing road improvement scheme has been introduced to involve local communities in the management of road network for their own development. However, decisions on maintenance and development expenditures and on key strategic issues on how to prioritize investments in low volume roads have not always been soundly based. The absence of a fully functional road maintenance management system makes it difficult to ensure that the maintenance budget is correctly allocated and is often well below what would be economic check on roads repaired or maintained using monies from the RF casts doubt on the proper utilization of expenditures in accordance with the Act. However it is to be remembered that the establishment of an RB to manage the RF has only just been realized and there has been insufficient opportunity for the RB to demonstrate its value added by addressing these concerns about the use of the funds.

In Ethiopia, the RF administration is seeking to improve its effectiveness in a number of areas in the current year, mainly focusing on: (i) establishing efficient commercial/business operations; (ii) maintaining effective public information systems and transparency through technical and financial audits, dissemination through workshops and seminars; (iii) developing performance contract agreements between the RF and road agencies. Establishment of performance contract arrangements has resulted in improved accountability of road agencies and efficiency in resource use. No longer is the payment made on a cash flow basis but rather on submission of payment certificates, approved by a supervisor. The payment certificates are based on agreed unit rates for each activity. However, there remain considerable scope for further efficiencies. The unit rates are based on an average of past works performed by the main road agency which reflect the inefficiencies of force account, which is still a predominant factor in Ethiopia if not in any of the other sample countries.

In Ghana, the RF has made significant impact on the overall maintenance of the national network. The accruals are in accordance with the projections made and releases from the RF to the road agencies for routine and periodic maintenance operations have been regular thereby enhancing planning and programming of activities. The performance of contractors has also been enhanced because of the assurance of prompt payment after works completion. The Ghana RF has been able to achieve operational efficiency primarily by establishing clear monitoring guidelines and disbursement procedures for routine and periodic maintenance works.

Overall, proper planning and programming of road works with well defined disbursement and accounting arrangements have helped to address two problems faced by the sector: (i) delays in budget approval and release of budget allocation, that impacts planning and implementation of maintenance works; and (ii) lack of synchronization between fund availability and the construction season when most maintenance works have to be done. The payment uncertainty and budget break came in the middle of work season , making it difficult to commit funds for a season long contract, while 95% of the maintenance jobs were done by private contractors for

whom regular payments were critical for survival and efficiency. In summary, experience to-date suggests that the RFs have been successful in improving the planning and programming of works due to not only stabilizing road financing but also improved management of that funding.

However, full implementation of the comprehensive range of reforms will take a long time despite the progress already made. Decades of neglect coupled with weak capacity of the local construction industry has created a difficult operating environment for the road sector. Sample inspection of contracts in the sample countries during 1998 revealed a number of shortcomings: (i) constraint to local private sector capacity due to lack of skills and insufficient resources; (ii) difficulty to achieve quality and value for money mainly because of constrained local engineering capacity that typify the road sector; and (iii) existence of a need for strong management framework for the setting up of contracts, procurement of works and contract administration. Limitations in local private sector capacity together with a lack of skills and resources available to road agencies for management of contracts are compromising quality objectives. Maintenance and rehabilitation contracts experience delays and cost overruns because technical constraints have not been fully recognized before the award of contracts.

4.4 Summary of Key Points

Road users are seeing improved quality of road networks in reforming countries – leading to reduced vehicle operating costs and travel times.

Quality improvements have been unevenly realized however – as with funding allocation, rural roads lag well behind main, trunk and urban.

Evidence suggests trends in improvement in operational efficiency, aided by adoption of commercial practices and transparency in the use of funds.

Resultant planning and programming improvements help develop opportunities for the local construction industry.

However these gains have been constrained by capacity limitations in both the road agencies and the industry itself.

5. CONCLUSIONS AND RECOMMENDATIONS

5.1 This paper reflects some of the results of a first assessment of performance of sample second generation RFs in Africa and to see how well the RFs have measured up to what was expected of them as one means of addressing the need for adequate and secure financing for road maintenance. The road sector reforms can be seen as the start of a process for increasing private sector participation in the planning, programming and management of the road works. The reforms have created a framework under which the private sector, as a key player on the RBs, has a pivotal role to play in planning and resource allocation mechanisms. For all its shortcomings, the introduction of the fuel levy and other user charges as the major source of maintenance funding is a major step forward from the earlier days when resources for road works were based on uncertain allocations from central budgets which might or might not have any relation to the actual maintenance needs.

5.2 While these are encouraging trends and represent a significant departure from the past, RF administrations and road agencies are not free from all the past constraints suffered by public sector works departments - technical assistance and knowledge sharing is required over some time before fully effective arrangements can be put in place for efficient maintenance of the road network. Lack of technical capacity and insufficient development of local construction industry has constrained efficient use of resources. One of the critical requirements for sustainable implementation of the reform process is to ensure that effective technology transfer and efficient use of new technologies goes hand in hand with robust and commercially oriented road management. This would require sharing of knowledge worldwide to allow transport professionals and policy makers to advance their knowledge and facilitate positive change in the maintenance of a road network. Clearly, some of the constraints faced by different countries as they advance the state of well maintained road network are common across national boundaries and it would help to benefit from diverse experiences.

5.3 For these reasons, improved technology transfer may have a critical role to play in addressing some of the constraints into which the current reforms have run. On the matter of continued inadequacy of funding in relation to maintenance need, it is suggested that a greater effort is needed to investigate low cost technical options for road maintenance with a view to reducing unit costs and increasing the labor as opposed to equipment component of the work. A complement to adoption of new technologies is to reduce standards, or rather to align standards to what the road user is able to afford in any given setting. On the matter of being able to use effectively the resources that are made available for road maintenance, technology can help make it easier for resources to be expended. This is in part organizational – let contract management be improved to reflect the best practices available to African countries, and in part technical - let the performance of African construction firms improve as these benefit from training in technical and business practices to do the best job possible.

5.4 Some of the key lessons emerging from this evaluation are:

(a) Setting up dedicated financing arrangements is a necessary but not a sufficient condition to ensure that a sustainable and stable basis of road maintenance is established which translates to improved service delivery. It is equally necessary to ensure that: (i) commitment exists at all levels to make commercialized road management work; (ii) aggregate resources are sufficient to cover all parts of the road network; (iii) road user fees are based on the maintenance “needs” of the road network; (iv) the RBs are appropriately constructed to ensure equitable representation of user interests; (v) a clear allocation of responsibilities exists between the RF administration and road agencies; and (viii) the road agencies have the capacity to carry out road maintenance works efficiently and effectively.

(b) Maintenance of main and urban road network is on a (modestly) improving trend even given the aforementioned limitations. That is not true for the rural network whose quality continues to deteriorate. This is partly a reflection of an inadequate planning and programming framework and partly a lack of capacity in the rural areas. Years of neglect have limited the capacity of the road agencies to carry out maintenance works, a deficiency most apparent in rural and feeder road agencies. Addressing this issue would benefit from dissemination of appropriate technology practice as well as alternate approaches to strengthen local construction industry that is relevant to the rural road environment.

(c) Sustainability of second generation RF based financing reforms is not currently assured as in no case are robust arrangements in place to assure adjustment of future resources to the level of needs. Inflation eats away at the real value of the fuel levy, undermining the very purpose of the levy, which is to provide a reliable and dependable source of road maintenance financing. To compensate for the impact of inflation, there is a need to built in mechanisms to adjust the levy regularly on the basis of a quantifiable criteria (say, increase in road maintenance cost index since the previous inflation-related fuel levy adjustment took place).

(d) Independent arrangements to conduct financial auditing of the RFs are required to ensure that: (i) all the money attributable to the RF is collected and paid into the RFs; and (ii) funds disbursed from the RF are spent on programs for which they are allocated. In addition, technical audit should involve continuous auditing of projects-in-progress for improving performance. There is a need to: (i) establish a Road Works Inspectorate to monitor the quantity and quality of work and ensure transparency and accountability for the use of road maintenance funds, most of which are now derived directly from the road-users; (ii) set up appropriate reporting responsibility of the Inspectorate to ensure its effectiveness; (iii) develop an updated and rationalized inventory and condition survey of the classified road network.

(g) When all is said and done, available RF resources may still not be sufficient in almost all African countries to fully finance maintenance needs of the entire road network in the foreseeable future. To ensure efficient distribution of available resources it is imperative to: (i) define a high priority core network; (ii) prioritize the road network not only on the basis of economic return but also social and environmental returns; (iii) focus on maintaining this network in good condition at lowest unit cost; (iv) set up performance agreements between the RF administration and the executing road agencies; (v) support for local contractors to participate in road maintenance; and (vi) develop and sustain a road maintenance management system, including road inventory.

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